

Appendix F: Frequency Stability Measurement

Frequency stability V.S. Temperature measurement

Reference Frequency: LTE Band 2 Middle channel=18900 channel=1880MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.80	-30	32	0.0171	2.5	Pass
	-20	37	0.0195		
	-10	33	0.0178		
	0	24	0.0130		
	10	27	0.0144		
	20	28	0.0152		
	30	40	0.0213		
	40	35	0.0185		
	50	32	0.0169		
Reference Frequency: LTE Band 4 Middle channel=20175 channel=1732.5MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.80	-30	22	0.0128	2.5	Pass
	-20	36	0.0208		
	-10	27	0.0155		
	0	25	0.0144		
	10	23	0.0133		
	20	23	0.0130		
	30	35	0.0205		
	40	26	0.0148		
	50	34	0.0198		

Reference Frequency: LTE Band 5 Middle channel=20175 channel=836.5MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.80	-30	30	0.0354	2.5	Pass
	-20	28	0.0336		
	-10	28	0.0340		
	0	21	0.0247		
	10	29	0.0349		
	20	22	0.0267		
	30	32	0.0377		
	40	29	0.0352		
	50	23	0.0271		
Reference Frequency: LTE Band 7 Middle channel=21100 channel=2535MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.80	-30	56	0.0220	2.5	Pass
	-20	72	0.0282		
	-10	55	0.0216		
	0	49	0.0194		
	10	52	0.0203		
	20	49	0.0192		
	30	86	0.0338		
	40	74	0.0293		
	50	64	0.0253		

Reference Frequency: LTE Band 17 Middle channel=20175 channel=710MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.80	-30	30	0.0424	2.5	Pass
	-20	31	0.0433		
	-10	24	0.0332		
	0	22	0.0315		
	10	28	0.0396		
	20	21	0.0301		
	30	35	0.0489		
	40	30	0.0420		
	50	21	0.0297		

Note: only show the test plots of the worst case.

Frequency stability V.S. Voltage measurement

Reference Frequency: LTE Band 2 Middle channel=18900 channel=1880MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.38	21	0.0112	2.5	Pass
	3.80	31	0.0163		
	3.23	29	0.0152		
Reference Frequency: LTE Band 4 Middle channel=20175 channel=1732.5MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.38	40	0.0233	2.5	Pass
	3.80	29	0.0170		
	3.23	32	0.0183		
Reference Frequency: LTE Band 5 Middle channel=20175 channel=836.5MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.38	13	0.0160	2.5	Pass
	3.80	27	0.0326		
	3.23	23	0.0276		
Reference Frequency: LTE Band 7 Middle channel=21100 channel=2535MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.38	55	0.0217	2.5	Pass
	3.80	61	0.0242		
	3.23	73	0.0290		
Reference Frequency: LTE Band 17 Middle channel=20175 channel=710MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.38	20	0.0282	2.5	Pass
	3.80	20	0.0280		
	3.23	19	0.0269		

Note: only show the test plots of the worst case.